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E  
4/16/98

**SITE ASSESSMENT REPORT  
FOR  
THE FORMER ARCO RESEARCH FACILITY  
HARVEY, COOK COUNTY, ILLINOIS  
TDD: S05-9802-003  
PAN: 8F0301SIXX**

April 16, 1998

Prepared for:

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Emergency and Enforcement Response Branch  
77 West Jackson Boulevard  
Chicago, Illinois 60604**

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**ecology and environment, inc.**  
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## **1. Introduction**

The Ecology and Environment, Inc. (E & E), Superfund Technical Assessment and Response Team (START) was tasked by the Emergency Response Branch (ERB) of the United States Environmental Protection Agency (U.S. EPA) to conduct a site assessment at the Former ARCO Research Facility site in Harvey, Cook County, Illinois, under Technical Direction Document (TDD) S05-9802-003. START was tasked to prepare and implement a health and safety plan; compile and review background information; subcontract analytical services; document conditions at the site; conduct air monitoring and multi-media sampling; evaluate threats to human health and the environment; and make recommendations and provide options to U.S. EPA as to the potential need for a removal action, further investigation, referral to other government agencies or U.S. EPA programs, or other actions which may be prudent. The site assessment was performed in accordance with the National Contingency Plan (NCP) in the Code of Federal Regulations (CFR) Section 300.415 to evaluate on-site conditions and possible threats to human health, welfare, and the environment. The site assessment was conducted on February 5 through 6, 1998, under the authority of U.S. EPA On-Scene Coordinator (OSC) Fred Bartman. This report summarizes START site assessment activities.

## **2. Site Background**

### **2.1 Site Description**

The Former ARCO Research Facility is located in Harvey, Illinois. The western boundary of the site parallels the Illinois Central Railroad or Metra Electric commuter rail line, the northern boundary is 147th Street, the eastern boundary of the site is adjacent to an auto research facility, and the southern boundary of the site is adjacent to additional industrial buildings. Field Elementary School is located immediately east of the site. The nearest body of water is the Calumet River, which is located approximately 2,400 feet east of the site (Figure 1).

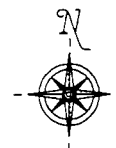
Two main buildings and seven smaller buildings located on the site. The locations of these buildings are depicted in Figure 2-2. The building that housed a radiation source is located on the northwest side of the site and is in disrepair. Two areas that housed aboveground storage tanks are empty, except for some piping and the remaining concrete pads. A roofed metal structure covers materials, including lignosulfonate, stored on the western side of the site. The old cooling towers for the site's power plant are located near the northwest side of the site. A parking lot is located on the northwest corner of the site. Refueling stations are located on the site parking lot and on the road south of the of the parking lot, on the western side of the site. Power is still supplied to the site, as well as the transformers and power plant. Approximately 140 drums are located on the site. Three tanker truck trailers are stored on the site, immediately south of the western buildings (Figure 2-2).

### **2.2 Site History**

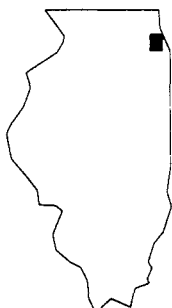
The site is the former ARCO Chemical Research Facility that blended oil/gasoline. The buildings located on the site have been used by various businesses after ARCO ceased operations on the site. The building located on the northwest side of the site has not been used since ARCO ceased operations. This building housed a radioactive material which has been removed from site. A

company that manufactured lignosulfonate, an agricultural food additive and dust suppressant, was housed in the large building on the western side of the site. Currently, a business that manufactures lignosulfonate and iron oxide pigment is in operation in the large building on the western side of the site (Figure 2-2).

In 1983, ARCO hired Woodward and Clyde to conduct an environmental site assessment at the site. Woodward and Clyde drilled soil borings and collected samples from the southwestern part of the site; analytical results indicated the existence of elevated metals. Presently Cook County, Illinois, owns the property after acquiring the property through delinquent taxes.



Quadrangle Location



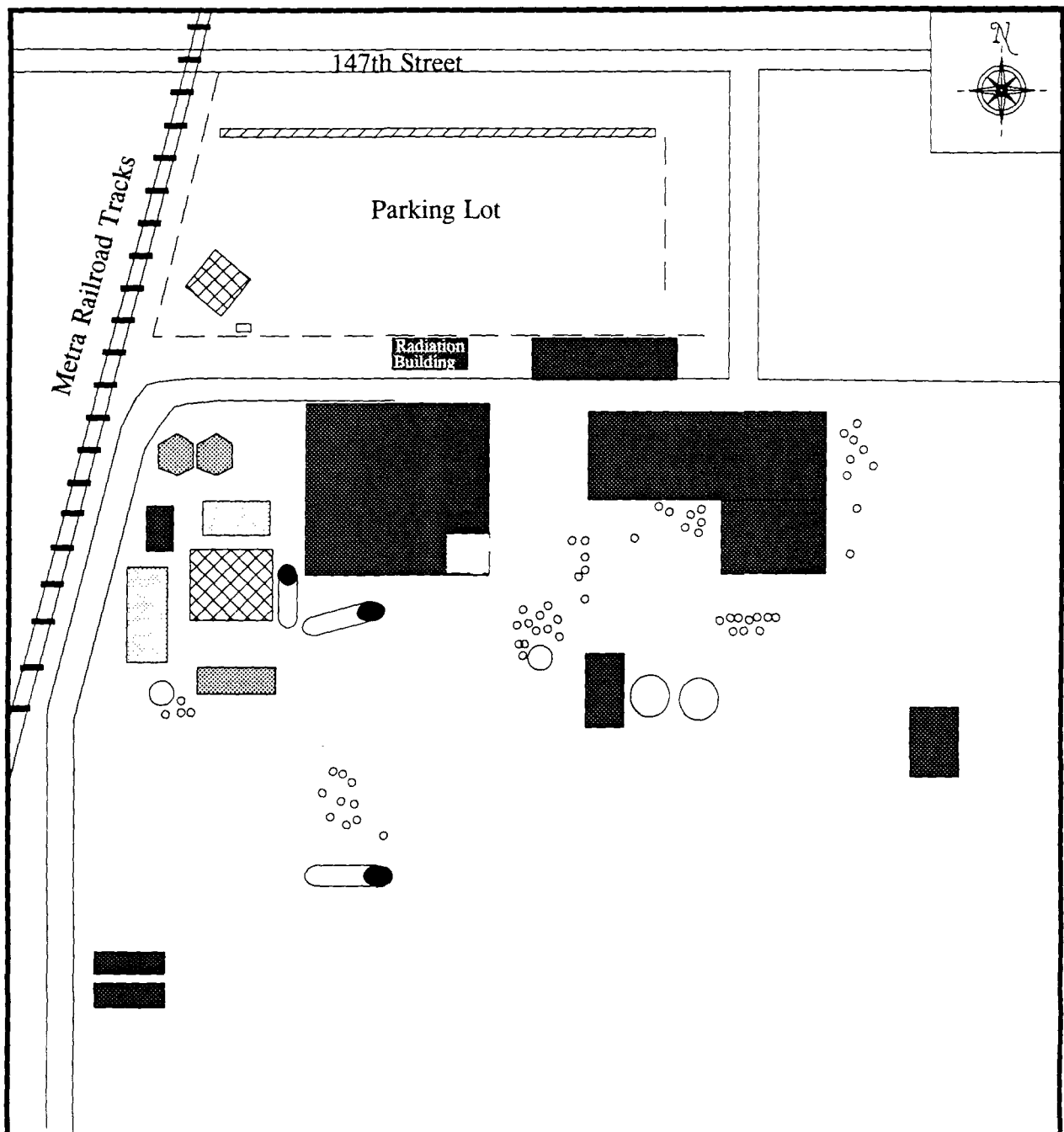
Illinois



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 Region 5  
 33 North Dearborn Street, Chicago, Illinois 60602

Title	Site Location Map	Figure	2-1
Site	Former ARCO Research Facility	Scale	1:24000
City	Harvey	State	Illinois
Source	U.S.G.S. 7.5 Minute Series Harvey, Blue Island, and Calumet City Quadrangles	TDD	S05-9802-003
		Date	1963, 1968
		Revised	1973, 1980





<b>Legend</b> Fence Drum Tanker Building Cooling Tower Concrete Pad Covered Storage Area		 <b>ecology and environment, inc.</b> Superfund Technical Assessment and Response Team Region 5 33 North Dearborn Street, Chicago, Illinois 60602	
Title	Site Features Map	Figure	2-2
Site	Former ARCO Research Facility	Scale	Not to scale
City	Harvey	State	Illinois
Source	Ecology & Environment, Inc.	TDD	S05-9802-003
		Date	2/23/1998

### 3. Site Assessment

On February 5, 1998, START members Joseph Klemp and William Sass mobilized to the Former ARCO Research Facility site. START was met at the site by U.S. EPA OSC Fred Bartman, U.S. EPA Civil Investigator Joe Kaweck, and the City of Harvey Fire Department Fire Inspector Richard Gini. START conducted a radiation survey of the radiation source building on the site. This building had housed a radiation source used in the research performed at the facility. Access to the interior of the building was provided by the facility's maintenance personnel. The radiation survey registered slight elevations of radioactivity above background on the wall between the radiation source room and the control room on the northeastern side of the building (Figure 3-1). The radiation readings were 15,000 counts per minute (cpm) measured with a sodium iodide probe or 0.05 milliRems per hour (mR/hr) measured on a pancake probe. Background radiation measured over 0.25 mile east of the site is 5,000 cpm or 0.01 mR/hr.

Following the radiation survey, U.S. EPA, the Fire Inspector, and START spoke with the tenant of a larger manufacturing building located south of the radiation building. The tenant of this building manufactures lignosulfonate for agricultural use and an iron oxide pigment. After speaking with the tenant of the building, U.S. EPA, START, the Fire Inspector, and maintenance personnel performed a reconnaissance of the western part of the site and identified various areas for possible sampling.

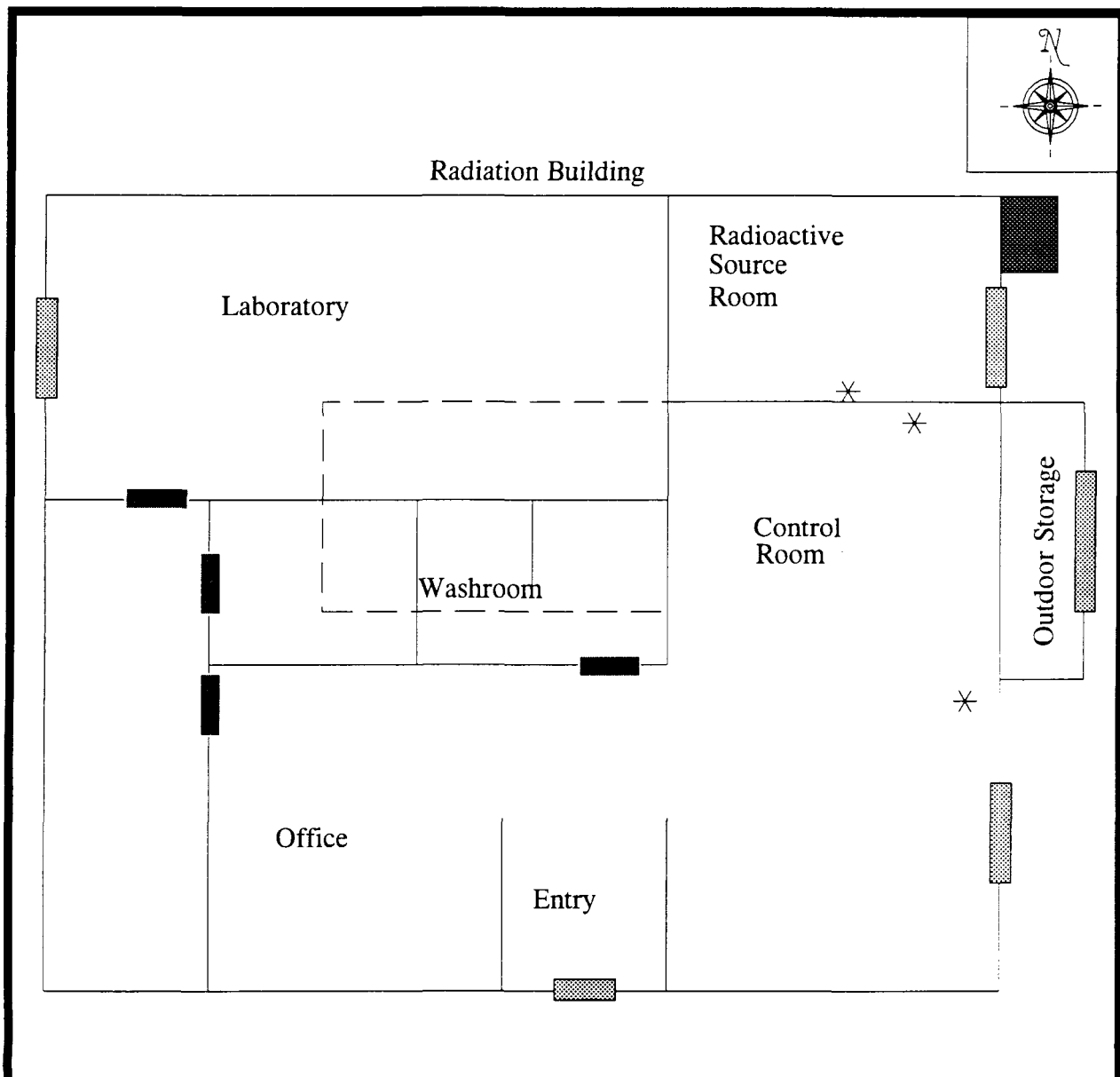
On February 6, 1998, the U.S. EPA OSC Fred Bartman, START members Joseph Klemp and Garth Daley, and the City of Harvey Fire Inspector Richard Gini returned to site. START checked the level of gasoline and/or oil remaining in underground storage tanks on the northwestern side of the site. A total of 10 out of 12 tanks were checked using a bailer. The maximum level of fuel and/or oil left in any of the tanks is 3 inches in depth. Air monitoring was conducted using a

photoionization detector (PID). Readings taken with a PID at the openings to the tank peaked above 2,000 parts per million (ppm) for the tanks with remnant fuel. The tanks not checked were inaccessible. All tanks were considered empty by the OSC and Fire Marshall. No apparent leaking of fuel from the underground storage tanks was noted. START counted 140 drums on site of various types and in conditions ranging from degraded, corroded, and rusty to intact. Labels on the drums indicated that they contain; "hydraulic oil", types of motor oil, and "Sorbital", described as a non-hazardous material.




Various materials on site were hazard categorization tested for pH and flammability. The lignosulfonate material had a pH measurement in the range of 6 to 7 standard units. The liquid material found in the tanker on the southern side of the site was found to be basic with a pH measurement of 12.5 standard units. Some acidic crystalline material, labeled copper sulfonate, was found on the western side of the site, with a pH measurement ranging from 3 to 5 standard units. All materials tested for flammability had negative results. Approximately 3 to 4 drums located south of the easternmost large building were opened and field checked for pH. These drums were marked as corrosive, but were reported to contain used motor oil by the site's maintenance man. The pH of drum contents were field tested with pH paper and had a pH of 6 to 7 standard units. The material appeared to be used motor oil.

START collected six samples from various containers on the site. Sample S-1 was a grayish solid collected from a corroded drum located within an abandoned truck trailer on the southwestern side of the site. Sample S-2 was a brown solid collected from a bag labeled lignosulfonate located under a canopy on the southwestern side of the site. Sample T-1 was a dark liquid collected from a plastic storage tank located southeast of the large building on site. Samples S-1, S-2, and T-1 were analyzed for total Resource Conservation and Recovery Act (RCRA) metals. Sample TANKER was a clear liquid collected from an abandoned tanker trailer located on the southwestern part of the site; sample TANKER was analyzed for pH and flammability. Sample HYDRA-1 was a dark liquid collected from a drum labeled "Hydraulic Oil"; sample HYDRA-1 was analyzed for polychlorinated biphenyls (PCBs) and RCRA metals. Sample FREON-1 was a yellow liquid collected from a small drum labeled "FREON 11, Trichlorofluoromethane", located in the driveway to the east of the large building; sample FREON-1 was analyzed for semivolatile organic compounds (SVOCs), volatile organic compounds (VOCs), and RCRA metals. All samples were shipped to Gabriel Laboratories in

Chicago, Illinois, with a Quality Assurance/Quality Control (QA/QC) Level II data package requested.



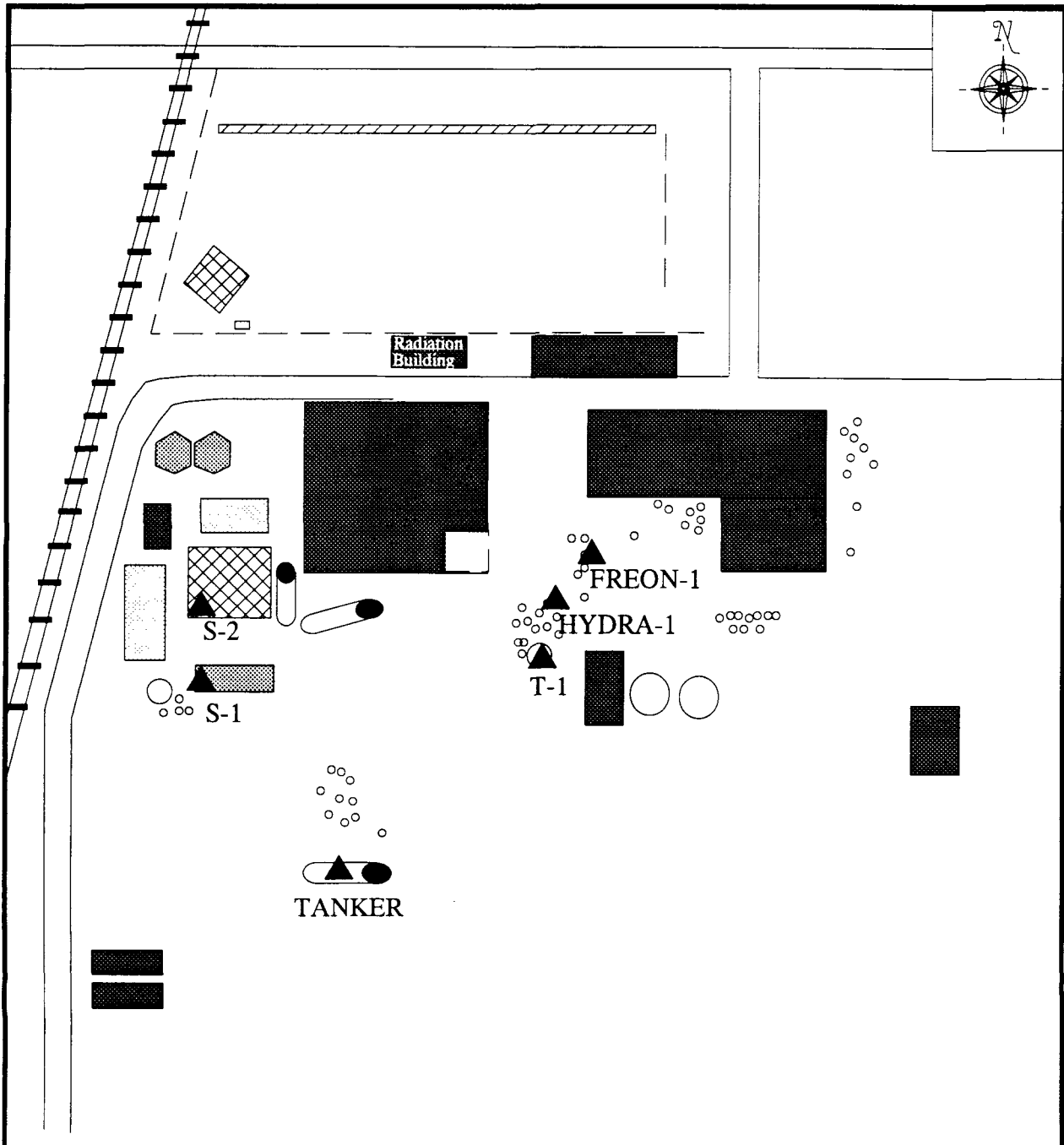
### Legend

-  Doorway
-  Attic Space
-  Surveyed at  
14,000-15,000 cpm



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Title		Figure	
Radiation Survey Map		3-1	
Site		Scale	
Former ARCO Research Facility		Not to scale	
City	State	Date	
Harvey	Illinois	2/23/98	
Source		TDD	
Ecology & Environment, Inc.		S05-9802-003	



# Legend



Sample Location



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Region 5

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Title	Sample Location Map	Figure	3-2
Site	Former ARCO Research Facility	Scale	Not to scale
City	Harvey	State	Illinois
Source	Ecology & Environment, Inc.	Date	2/23/98
		TDD	S05-9802-003

#### **4. Analytical Results**

A total of six samples were collected from the Former ARCO Research Facility site: two soil samples, one liquid and soil mixture sample, and three liquid samples. Three of the samples collected were analyzed for total RCRA metals; one sample for PCBs and RCRA metals; one sample for SVOCs, VOCs, and RCRA metals; and one sample for pH and flammability. Analytical results indicated the sample collected from a tanker truck (sample TANKER) stored on the site to have a pH measurement of 12.5 standard units and a flammability of 152°F. The analytical results also indicated detectable concentrations of RCRA metals, including barium at 29.9 milligrams per kilogram (mg/kg), total cadmium at 0.576 mg/kg, chromium at 27.3 mg/kg, lead at 10.2 mg/kg, and mercury at 0.128 mg/kg. No PCBs, SVOCs, or VOCs were detected in the samples. The analytical results are summarized in Table 4-1.

<p align="center"><b>Table 4-1</b></p> <p align="center"><b>ANALYTICAL RESULTS SUMMARY</b></p> <p align="center"><b>FORMER ARCO RESEARCH FACILITY</b></p> <p align="center"><b>HARVEY, COOK COUNTY, ILLINOIS</b></p> <p align="center"><b>FEBRUARY 6, 1998</b></p>						
Parameter	Sample Designation					
	S-1	S-2	T-1	TANKER	HYDRA-1	FREON-1
Flash Point (°F)	NA	NA	NA	152	NA	NA
pH (standard units)	NA	NA	NA	12.5	NA	NA
<b>Total Metals (mg/kg)</b>						
Barium	29.9	3.99	ND	NA	ND	ND
Cadmium	ND	ND	ND	NA	ND	0.576
Chromium	27.3	ND	ND	NA	ND	ND
Lead	10.2	ND	ND	NA	ND	ND
Mercury	0.128	ND	ND	NA	ND	ND

Key:

mg/kg = Milligrams per kilogram.

ND = Not detected or below detection limits of analytical method.

NA = Not analyzed.

Source: Ecology and Environment. Inc.



## **5. Discussion of Potential Threats**

The site is located in an industrial park. A school is located approximately 1,000 feet east of the site. No residential housing borders the site. The site drains into sewers that were designed to handle petroleum wastes. The majority of the waste is nonhazardous and nontoxic motor oil. Motor oil is exempt from action under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) unless it exhibits characteristics of RCRA hazardous waste. The liquid material found in the tanker on the southern side of the site has a pH measurement of 12.5 standard units. According to CFR Section 261.22, an aqueous material with a pH less than or equal to 2, or greater than or equal to 12.5 is considered a corrosive hazardous waste under RCRA. Although radioactivity was detected slightly above background, it is not considered a threat to the public health.

## **6. Removal Alternatives**

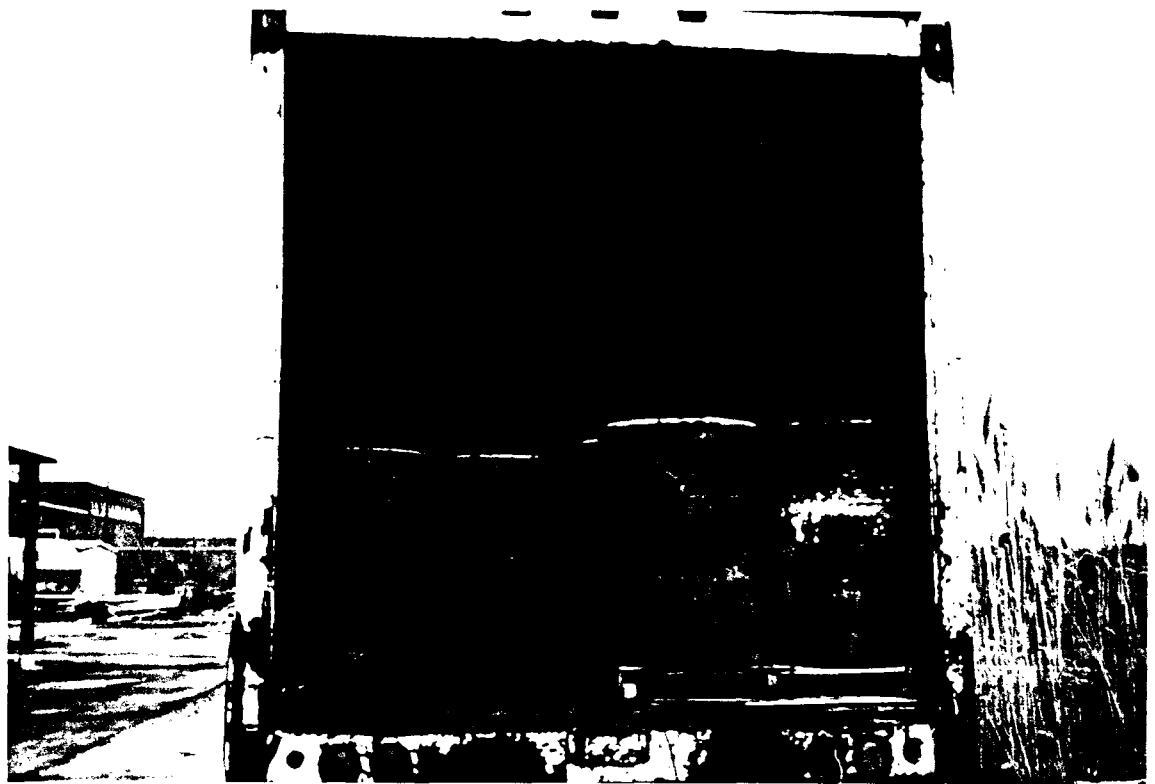
Based upon observations made during the U.S. EPA site assessment, and analytical results from samples collected at the Former ARCO Research Facility site, a CERCLA removal action is not warranted.

## **7. Summary**

The Former ARCO Research Facility is a former petroleum fuel testing area. The site has been shut down by ARCO and is now used by a lignosulfonate manufacturing facility. Analytical results of samples collected at the site indicated detectable levels of RCRA metals and some materials with a high basic pH measurement of 12.5 standard units.

## **Appendix A**

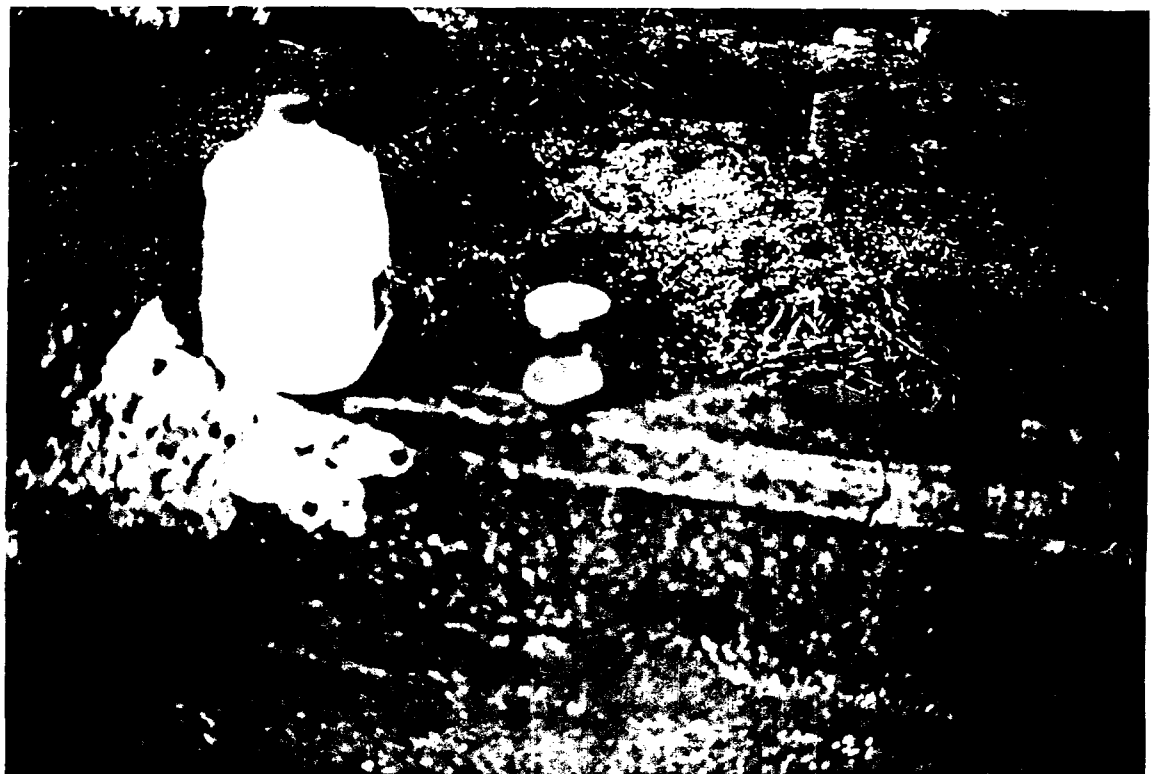
### **Photodocumentation**



**Site:** Former ARCO Research Facility  
**Location:** Harvey, IL  
**Subject:** Corroded drums in abandoned trailer.

**Date:** February 5, 1998  
**Direction:** East

**Time:** 1605  
**Photographer:** J. Klemp



**Site:** Former ARCO Research Facility  
**Location:** Harvey, IL  
**Subject:** Unknown green material mixed with distilled water (material had a pH of 4 to 5 standard units).

**Date:** February 6, 1998  
**Direction:** West

**Time:** 0945  
**Photographer:** J. Klemp



**Site:** Former ARCO Research Facility      **Date:** February 5, 1998      **Time:** 1430  
**Location:** Harvey, IL      **Direction:** Northeast      **Photographer:** J. Klemp  
**Subject:** Former ARCO Research Facility building that housed radiation source.



**Site:** Former ARCO Research Facility      **Date:** February 5, 1998      **Time:** 1600  
**Location:** Harvey, IL      **Direction:** East      **Photographer:** J. Klemp  
**Subject:** Drums located near southeastern corner of easternmost building.



Site: Former ARCO Research Facility      Date: February 6, 1998      Time: 1640  
Location: Harvey, IL      Direction: North      Photographer: J. Klemp  
Subject: Drums located behind building on eastern side of site.



Site: Former ARCO Research Facility      Date: February 6, 1998      Time: 1650  
Location: Harvey, IL      Direction: South      Photographer: G. Daley  
Subject: Tanker and drums located on southern end of site.

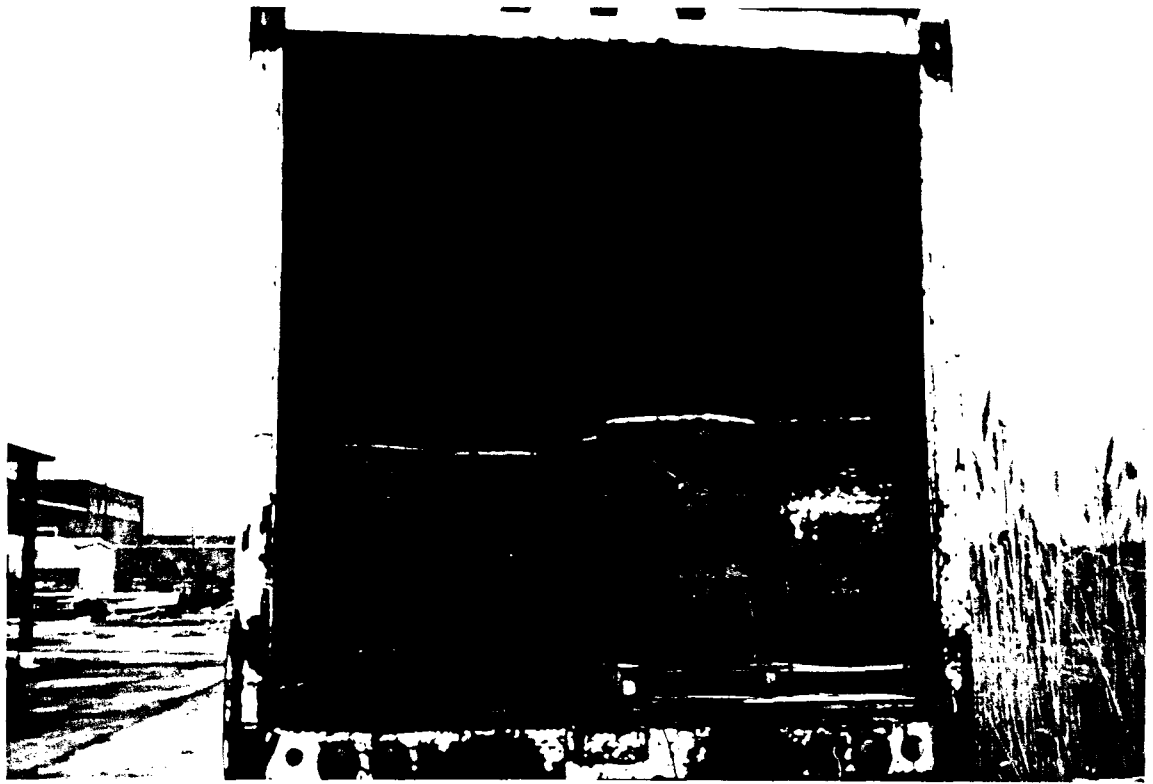


Site: Former ARCO Research Facility      Date: February 6, 1998      Time: 0950  
 Location: Harvey, IL      Direction: Down      Photographer: J. Klemp  
 Subject: View of broken bag and unknown green material located on southwestern concrete area.



Site: Former ARCO Research Facility      Date: February 6, 1998      Time: 1125  
 Location: Harvey, IL      Direction: Northeast      Photographer: J. Klemp  
 Subject: Bags of lignosulfonate material stored on site.





**Site:** Former ARCO Research Facility      **Date:** February 5, 1998      **Time:** 1605  
**Location:** Harvey, IL      **Direction:** East      **Photographer:** J. Klemp  
**Subject:** Corroded drums in abandoned trailer.



**Site:** Former ARCO Research Facility      **Date:** February 6, 1998      **Time:** 0945  
**Location:** Harvey, IL      **Direction:** West      **Photographer:** J. Klemp  
**Subject:** Unknown green material mixed with distilled water (material had a pH of 4 to 5 standard units).



**Site:** Former ARCO Research Facility      **Date:** February 5, 1998      **Time:** 1545  
**Location:** Harvey, IL      **Direction:** South      **Photographer:** B. Sass  
**Subject:** START Klemp pointing at placard that reads 1789 (HCl) on tanker marked "Rally Transit".

## Appendix B

### Analytical Data



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## M E M O R A N D U M

DATE: March 13, 1998

TO: Joseph Klemp, START Project Manager, E & E, Chicago, Illinois

FROM: David Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

THROUGH: Mary Jane Ripp, START Assistant Program Manager, E & E, Chicago, Illinois

SUBJECT: Data Quality Review for Polychlorinated Biphenyls (PCBs), Former Arco Research Facility, Harvey, Cook County, Illinois

REFERENCE: Project TDD S05-9802-003 Analytical TDD S05-9802-804  
Project PAN 8F0301SIXX Analytical PAN 8FAD01TAXX

The data quality assurance (QA) review of one drum sample collected from the Former Arco Research Facility site is complete. The sample was collected on February 6, 1998, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The sample was submitted to Gabriel Laboratories, Chicago, Illinois. The laboratory analyses were performed according to the United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Method 8081.

### Sample Identification

START  
Identification No.

Hydra-1

Laboratory  
Identification No.

C802082-05A

### Data Qualifications:

#### I. Sample Holding Time: Acceptable

The sample was collected on February 6, 1998, extracted on February 10, 1998, and analyzed on February 12, 1998. This is within the 14-day holding time limit, from collection to extraction, and 40-day limit from extraction to analysis.

II. Instrument Performance: Acceptable

The chromatographic resolution was adequate in the standard and sample chromatograms. Surrogate retention times were consistent in the sample and standards.

III. Calibrations:

Initial Calibration: Acceptable

A five-point initial calibration was performed prior to analysis. The percent relative standard deviations (%RSDs) between response factors were less than 20% for all PCBs.

Continuing Calibration: Acceptable

The percent differences of the response factors were less than 15%, for detected PCBs.

IV. Blank: Acceptable

A method blank was analyzed with the sample. No target compounds or contaminants were detected in the blank.

V. Compound Identification: Not Applicable

There were no detected PCBs in the sample.

VI. Additional QC Checks: Acceptable

The recoveries of the surrogates used in the sample were within acceptable laboratory limits.

VII. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 7.0, PCBs. Based upon the information provided, the data are acceptable for use.



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## M E M O R A N D U M

DATE: March 13, 1998

TO: Joseph Klemp, START Project Manager, E & E, Chicago, Illinois

FROM: David Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

THROUGH: Mary Jane Ripp, START Assistant Program Manager, E & E, Chicago, Illinois

SUBJECT: Organic Data Quality Review for Volatile Organic Compounds (VOCs), Former Arco Research Facility, Harvey, Cook County, Illinois

REFERENCE: Project TDD S05-9802-003 Analytical TDD S05-9802-804  
Project PAN 8F0301SIXX Analytical PAN 8FAD01TAXX

The data quality assurance (QA) review of one drum sample collected from the Former Arco Research Facility site is complete. The sample was collected on February 6, 1998, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The sample was submitted to Gabriel Laboratories, Chicago, Illinois. The laboratory analysis was performed according to the United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Method 8260.

### Sample Identification

START  
Identification No.

Freon-1

Laboratory  
Identification No.

C802082-06A

### Data Qualifications:

#### I. Sample Holding Time: Acceptable

The sample was collected on February 6, 1998, and analyzed on February 10, 1998. This is within the 14-day holding time limit.

II. Gas Chromatography/Mass Spectrometry (GC/MS) Tuning:  
Acceptable

GC/MS tuning to meet ion abundance criteria using bromofluorobenzene (BFB) were acceptable and the sample was analyzed within 12 hours of BFB tuning.

III. Calibrations:

Initial Calibration: Qualified

A five-point initial calibration was performed prior to analysis. All average response factors were greater than 0.05, except acetone; therefore, the nondetect value for this compound has been flagged "R", as required. The percent relative standard deviations (%RSDs) between response factors were less than 30% for all detected target compounds.

Continuing Calibration: Acceptable

The percent differences of the response factors were less than 25%, as required for detected target compounds.

IV. Blank: Acceptable

A method blank was analyzed with the sample. No target compounds or contaminants were detected in the blank.

V. Internal Standards: Acceptable

The areas of the internal standards in the sample were within -50% to +100% of the associated calibration check standard. The retention times of the internal standards were within the 30-second control limit.

VI. Compound Identification: Not Applicable

There were no target compounds detected in the sample.

VII. Additional QC Checks: Acceptable

The recoveries of the surrogates used in the sample and blank were within laboratory-established guidelines.

Former Arco Research Facility  
Project TDD S05-9802-003  
Analytical TDD S05-9802-804  
VOCs  
Page 3

VIII. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 5.0, VOAs By GC/MS analysis. Based upon the information provided, the data are acceptable for use, with the above-stated qualifications.

Data Qualifiers and Definitions:

R - The sample results are rejected (analyte may or may not be present) due to gross deficiencies in quality control criteria. Any reported value is unusable. Resampling and/or reanalysis is necessary for verification.





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## M E M O R A N D U M

DATE: March 13, 1998

TO: Joseph Klemp, START Project Manager, E & E, Chicago, Illinois

FROM: David Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

THROUGH: Mary Jane Ripp, START Assistant Program Manager, E & E, Chicago, Illinois

SUBJECT: Organic Data Quality Review for Semivolatile Organic Compounds (SVOCs), Former Arco Research Facility, Harvey, Cook County, Illinois

REFERENCE: Project TDD S05-9802-003 Analytical TDD S05-9802-804  
Project PAN 8F0301SIXX Analytical PAN 8FAD01TAXX

The data quality assurance (QA) review of one drum sample collected from the Former Arco Research Facility site is complete. The sample was collected on February 6, 1998, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The sample was submitted to Gabriel Laboratories, Chicago, Illinois. The laboratory analysis was performed according to the United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Method 8270.

### Sample Identification

START  
Identification No.

Freon-1

Laboratory  
Identification No.

C802082-06A

### Data Qualifications:

#### I. Sample Holding Time: Acceptable

The sample was collected on February 6, 1998, extracted on February 17, 1998, and analyzed on February 19, 1998. This is within the 14-day holding time limit from collection to extraction, and 40-day limit from extraction to analysis.

II. Gas Chromatography/Mass Spectrometry (GC/MS) Tuning:  
Acceptable

GC/MS tuning to meet ion abundance criteria using decafluorotriphenylphosphine (DFTPP) were acceptable and the sample was analyzed within 12 hours of DFTPP tuning.

III. Calibrations:

Initial Calibration: Qualified

A five-point initial calibration was performed prior to analysis. All average response factors were greater than 0.05, except benzidine; therefore, the nondetect value for this compound has been flagged "R", as required. The percent relative standard deviations (%RSDs) between response factors were less than 30% for all detected target compounds.

Continuing Calibration: Acceptable

The percent differences of the response factors were less than 25%, as required for detected target compounds.

IV. Blank: Acceptable

A method blank was analyzed with the sample. No target compounds or contaminants were detected in the blank.

V. Internal Standards: Acceptable

The areas of the internal standards in the sample were within -50% to +100% of the associated calibration check standard. The retention times of the internal standards were within the 30-second control limit.

VI. Compound Identification: Not Applicable

There were no target compounds detected in the sample.

VII. Additional QC Checks: Acceptable

The recoveries of the surrogates used in the sample and blank were within laboratory-established guidelines.

Former Arco Research Facility  
Project TDD S05-9802-003  
Analytical TDD S05-9802-804  
SVOCs  
Page 3

VIII. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 4.0, BNAs By GC/MS analysis. Based upon the information provided, the data are acceptable for use, with the above-stated qualifications.

Data Qualifiers and Definitions:

R - The sample results are rejected (analyte may or may not be present) due to gross deficiencies in quality control criteria. Any reported value is unusable. Resampling and/or reanalysis is necessary for verification.



# ecology and environment, inc.

International Specialists in the Environment

33 North Dearborn Street  
Chicago, Illinois 60602  
Tel. 312/578-9243, Fax: 312/578-9345

## M E M O R A N D U M

DATE: March 13, 1998

TO: Joseph Klemp, START Project Manager, E & E, Chicago, Illinois

FROM: David Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

THROUGH: Mary Jane Ripp, START Assistant Program Manager, E & E, Chicago, Illinois

SUBJECT: Inorganic Data Quality Review for Resource Conservation and Recovery Act (RCRA) Metals, Former Arco Research Facility, Harvey, Cook County, Illinois

REFERENCE: Project TDD S05-9802-003 Analytical TDD S05-9802-804  
Project PAN 8F0301SIXX Analytical PAN 8FAD01TAXX

The data quality assurance (QA) review of three samples collected from the Former Arco Research Facility site is complete. The samples were collected on February 6, 1998, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to Gabriel Laboratories, Chicago, Illinois. The laboratory analyses were performed according to the United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Methods 6010 and 7000.

### Sample Identification

#### START Identification No.

S-1  
S-2  
T-1

#### Laboratory Identification No.

C802082-01A  
C802802-02A  
C802802-03A

Data Qualifications:

I. Sample Holding Time: Acceptable

The samples were collected on February 6, 1998, and analyzed between February 13 and 18, 1998. Analysis for mercury was performed on February 26, 1998. This is within the 6-month (28 days for mercury) holding time limit.

II. Calibration:

• Initial Calibration: Acceptable

Recoveries for the initial calibration verification were within 90 to 110% (80 to 120% for mercury), as required. The correlation coefficient for mercury exceeded 0.995.

• Continuing Calibration: Acceptable

All analytes included in the continuing calibration verification standard were within 90 to 110% (80 to 120% for mercury), as required.

III. Blanks: Acceptable

Calibration and preparation blanks were analyzed with each analytical batch. No target analytes were detected in the blanks.

IV. Overall Assessment of Data For Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990) Data Validation Procedures, Section 3.0, Metallic Inorganic Parameters. Based upon the information provided, the data are acceptable for use.



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33 North Dearborn Street  
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## M E M O R A N D U M

DATE: March 13, 1998

TO: Joseph Klemp, START Project Manager, E & E, Chicago, Illinois

FROM: David Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

THROUGH: Mary Jane Ripp, START Assistant Program Manager, E & E, Chicago, Illinois

SUBJECT: Data Quality Review for Flash Point and pH, Former Arco Research Facility, Harvey, Cook County, Illinois

REFERENCE: Project TDD S05-9802-003 Analytical TDD S05-9802-804  
Project PAN 8F0301SIXX Analytical PAN 8FAD01TAXX

The data quality assurance (QA) review of one sample collected from the Former Arco Research Facility site is complete. The sample was collected on February 6, 1998, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The sample was submitted to Gabriel Laboratories, Chicago, Illinois. The laboratory analyses were performed according to the United States Environmental Protection Agency (U.S. EPA) Methods 4500-H+ and ASTM 3828-87.

### Sample Identification

START  
Identification No.

Tanker

Laboratory  
Identification No.

C802082-04A

### Data Qualifications:

#### I. Sample Holding Time: Acceptable

The sample was collected on February 6, 1998, and analyzed on February 10 and 16, 1998. The Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990) does not specify holding times for these parameters.

Former Arco Research Facility  
Project TDD S05-9802-003  
Analytical TDD S05-9802-804  
Flash Point, pH  
Page 2

II. Calibrations: Acceptable

The calibrations for flash point and pH were verified before sample analyses. The calibration for flash point was verified using xylene and the calibration for pH was verified following analyses of three standard solutions.

III. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in OSWER Data Validation Procedures, Section 9.0, Generic Data Validation Procedures. Based upon the information provided, the data are acceptable for use.

Client: Ecology & Environment Inc.

Page 1

Sample Description: HYDRA-1  
Sample Date: 02/06/98  
Collected By: CLIENT PERSONNEL  
Test Description: PCB's

Sample No.: C802082-05A  
Date Received: 02/09/98  
Matrix: LIQUID  
Method: SW 846 8081

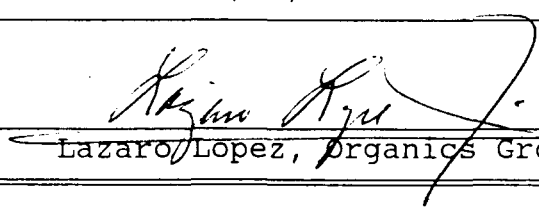
PARAMETER	RESULT	PQL
Arochlor-1016	< DL	10
Arochlor-1221	< DL	10
Arochlor-1232	< DL	10
Arochlor-1242	< DL	10
Arochlor-1248	< DL	10
Arochlor-1254	< DL	10
Arochlor-1260	< DL	10

COMMENTS:

EXTRACTED 02/10/98  
DATE RUN 02/12/98

UNITS mg/L  
ANALYST SS

DATA RELEASE  
AUTHORIZED BY:

  
Lazaro Lopez, Organics Group Manager

DATE: 2-16





# gabriel

environmental services

Client: Ecology & Environment Inc.

Page 1

Sample Description: FREON-1  
 Sample Date: 02/06/98  
 Collected By: CLIENT PERSONNEL  
 Test Description: Semivolatile Organics

Sample No.: C802082-06A  
 Date Received: 02/09/98  
 Matrix: LIQUID  
 Method: SW 8270

PARAMETER	RESULT	PQL	PARAMETER	RESULT	PQL
N-Nitrosodimethylamine	ND	1000.00	3-Nitroaniline	ND	1000.00
Aniline	ND	1000.00	Acenaphthene	ND	1000.00
Phenol	ND	1000.00	2,4-Dinitrophenol	ND	2000.00
bis-(2-Chloroethyl) ether	ND	1000.00	4-Nitrophenol	ND	2000.00
2-Chlorophenol	ND	1000.00	Dibenzofuran	ND	2000.00
1,3-Dichlorobenzene	ND	1000.00	2,4-Dinitrotoluene	ND	1000.00
1,4-Dichlorobenzene	ND	1000.00	Diethylphthalate	ND	1000.00
1,2-Dichlorobenzene	ND	1000.00	Fluorene	ND	1000.00
Benzyl Alcohol	ND	2000.00	4-Chlorophenyl phenyl ether	ND	1000.00
2-Methylphenol	ND	1000.00	4-Nitroaniline	ND	1000.00
bis-(2-Chloroisopropyl) ether	ND	1000.00	4,6-Dinitro-2-methylphenol	ND	2000.00
4-Methylphenol	ND	1000.00	N-Nitrosodiphenylamine	ND	1000.00
Hexachloroethane	ND	1000.00	Azobenzene	ND	1000.00
Nitroso-di-N-propylamine	ND	1000.00	4-Bromophenyl phenyl ether	ND	1000.00
robenzene	ND	1000.00	Hexachlorobenzene	ND	1000.00
isophorone	ND	1000.00	Pentachlorophenol	ND	2000.00
2-Nitrophenol	ND	1000.00	Phenanthrene	ND	1000.00
2,4-Dimethylphenol	ND	1000.00	Anthracene	ND	1000.00
bis-(2-Chloroethoxy) methane	ND	1000.00	Carbazole	ND	1000.00
2,4-Dichlorophenol	ND	1000.00	Di-N-butylphthalate	ND	1000.00
1,2,4-Trichlorobenzene	ND	1000.00	Fluoranthene	ND	1000.00
Benzoic Acid	ND	2000.00	Benzidine	ND	2000.00
Naphthalene	ND	1000.00	Pyrene	ND	1000.00
4-Chloroaniline	ND	1000.00	Butylbenzylphthalate	ND	1000.00
hexachlorobutadiene	ND	1000.00	Benzo[a]anthracene	ND	1000.00
Chloro-3-methylphenol	ND	1000.00	3,3'-Dichlorobenzidine	ND	1000.00
2-Methylnaphthalene	ND	1000.00	Chrysene	ND	1000.00
Hexachlorocyclopentadiene	ND	2000.00	bis-(2-Ethylhexyl)phthalate	ND	1000.00
2,4,6-Trichlorophenol	ND	1000.00	Di-N-octylphthalate	ND	1000.00
2,4,5-Trichlorophenol	ND	1000.00	Benzo[b]fluoranthene	ND	1000.00
2-Chloronaphthalene	ND	1000.00	Benzo[k]fluoranthene	ND	1000.00
Dimethyl phthalate	ND	1000.00	Benzo[a]pyrene	ND	1000.00
2-Nitroaniline	ND	1000.00	Indeno[1,2,3cd]pyrene	ND	1000.00
Acenaphthylene	ND	1000.00	Dibenzo[a,h]anthracene	ND	2000.00
2,6-Dinitrotoluene	ND	1000.00	Benzo[g,h,i]perylene	ND	1000.00

ROGATE	% RECOVERY	RECOVERY LIMITS	SURROGATE	% RECOVERY	RECOVERY LIMITS
2-Fluorophenol	17.50	43 - 116	2-Fluorobiphenyl	Q Q Q	21 - 100
Phenol-d6	15.31	10 - 94	2,4,6-Tribromophenol	11.58	10 - 123
Nitrobenzene-d5	9.86 Q	35 - 114	Terphenyl-d14	5.97 Q	33 - 141

UNITS: ug/L COMMENTS: Significant peaks observed outside target parameters.

DATE EXTRACTED: 02/17/98

DATE ANALYZED: 02/19/98

ANALYST: SS

DATA RELEASE AUTHORIZED BY:

*Lazaro Lopez*  
 Lazaro Lopez, Organics Group Manager

DATE: 2-24-98



# gabriel

environmental services

nt: Ecology & Environment Inc.

Page 1

Sample Description: FREON-1  
 Sample Date: 02/06/98  
 Collected By: CLIENT PERSONNEL  
 Test Description: Volatile Organics GC/MS

Sample No.: C802082-06A  
 Date Received: 02/09/98  
 Matrix: LIQUID  
 Method: SW 8260

PARAMETER	RESULT	PQL	PARAMETER	RESULT	PQL
Dichlorodifluoromethane	ND	500.00	1,1,2-Trichloroethane	ND	1000.00
Chloromethane	ND	2000.00	1,3-Dichloropropane	ND	500.00
Vinyl chloride	ND	1000.00	Tetrachloroethene	ND	500.00
Bromomethane	ND	2000.00	2-Hexanone	ND	10000.00
Chloroethane	ND	1000.00	Dibromochloromethane	ND	1000.00
Trichlorofluoromethane	ND	1000.00	1,2-Dibromoethane (EDB)	ND	500.00
1,1-Dichloroethene	ND	500.00	Chlorobenzene	ND	500.00
Acetone	ND	10000.00	1,1,1,2-Tetrachloroethane	ND	500.00
Iodomethane	ND	500.00	Ethyl benzene	ND	500.00
Carbon disulfide	ND	10000.00	m&p Xylene	ND	500.00
Methylene chloride	ND	2000.00	o-Xylene	ND	500.00
trans-1,2-Dichloroethene	ND	500.00	Styrene	ND	500.00
Methyl t-butyl ether (MTBE)	ND	10000.00	Bromoform	ND	500.00
1,1-Dichloroethane	ND	500.00	Isopropylbenzene	ND	500.00
Ethyl acetate	ND	10000.00	Bromobenzene	ND	500.00
cis-1,2-Dichloroethene	ND	500.00	1,2,3-Trichloropropane	ND	500.00
2,2-Dichloropropane	ND	1000.00	1,1,2,2-Tetrachloroethane	ND	500.00
2-Butanone (MEK)	ND	10000.00	n-Propylbenzene	ND	500.00
Bromochloromethane	ND	1000.00	2-Chlorotoluene	ND	500.00
Chloroform	ND	500.00	1,3,5-Trimethylbenzene	ND	500.00
1,1,1-Trichloroethane	ND	500.00	4-Chlorotoluene	ND	500.00
1,1-Dichloropropene	ND	1000.00	tert-Butylbenzene	ND	500.00
Carbon tetrachloride	ND	500.00	1,2,4-Trimethylbenzene	ND	500.00
Benzene	ND	500.00	sec-Butylbenzene	ND	500.00
2-Dichloroethane	ND	500.00	1,3-Dichlorobenzene	ND	500.00
1,1-Dichloroethene	ND	500.00	p-Isopropyltoluene	ND	500.00
1,2-Dichloropropane	ND	1000.00	1,4-Dichlorobenzene	ND	500.00
Dibromomethane	ND	1000.00	1,2-Dichlorobenzene	ND	500.00
Bromodichloromethane	ND	500.00	n-Butylbenzene	ND	500.00
2-Chloroethyl vinyl ether	ND	2000.00	1,2-Dibromo-3-chloropropane	ND	10000.00
cis-1,3-Dichloropropene	ND	1000.00	1,2,4-Trichlorobenzene	ND	500.00
4-Methyl-2-pentanone	ND	10000.00	Hexachlorobutadiene	ND	500.00
Toluene	ND	500.00	Naphthalene	ND	500.00
trans-1,3-Dichloropropene	ND	500.00	1,2,3-Trichlorobenzene	ND	500.00

SURROGATE	% RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	99	86 - 118
Toluene-d8	101	88 - 110
4-Bromofluorobenzene	105	86 - 115

UNITS: COMMENTS: Dilution due to sample matrix.  
 DATE ANALYZED: 02/10/98  
 ANALYST: SS

DATA RELEASE AUTHORIZED BY:

*Lázaro López*  
 Lázaro López, Organics Group Manager

DATE: 2-24-98



printed on recycled paper

Gabriel Log No.: C802082-01A  
Sample ID: S-1  
Date Collected: 02/06/98

Sample Matrix: SOLID  
Date Received: 02/09/98  
Collected By: CLIENT PERSONNEL

<u>Test Description</u>	<u>Result</u>	<u>Method</u>	<u>Analyzed By</u>
Arsenic	< 5.00	MCA 200.7	02/17/98 GK
Barium	29.9	MCA 200.7	02/17/98 GK
Cadmium	< 1.50	MCA 200.7	02/17/98 GK
Chromium - Total	27.3	MCA 200.7	02/17/98 GK
Lead	10.2	MCA 200.7	02/17/98 GK
Mercury	0.128	SW 7471	02/26/98 RG
Selenium	< 5.00	MCA 200.7	02/17/98 GK
Silver	< 2.50	SW 7760-A	02/13/98 IL

Gabriel Log No.: C802082-02A  
Sample ID: S-2  
Date Collected: 02/06/98

Sample Matrix: SOLID  
Date Received: 02/09/98  
Collected By: CLIENT PERSONNEL

<u>st Description</u>	<u>Result</u>	<u>Method</u>	<u>Analyzed By</u>
Arsenic	< 5.00	MCA 200.7	02/18/98 GK
Barium	3.99	MCA 200.7	02/18/98 GK
Cadmium	< 1.50	MCA 200.7	02/17/98 GK
Chromium - Total	< 2.25	MCA 200.7	02/17/98 GK
Lead	< 5.00	MCA 200.7	02/17/98 GK
Mercury	< 0.025	SW 7471	02/26/98 RG
Selenium	< 5.00	MCA 200.7	02/18/98 GK
Silver	< 2.50	SW 7760-A	02/13/98 IL

All units are expressed in mg/L for liquids and mg/Kg for solids except as noted.

Data Release Authorized By: Danuta Panek Date: 2/26/98  
Danuta Panek, Inorganic Group Manager



Gabriel Log No.: C802082-03A  
Sample ID: T-1  
Date Collected: 02/06/98

Sample Matrix: OIL  
Date Received: 02/09/98  
Collected By: CLIENT PERSONNEL

<u>Test Description</u>	<u>Result</u>	<u>Method</u>	<u>Analyzed By</u>
Arsenic	< 5.00	MCA 200.7	02/17/98 GK
Barium	0.918	MCA 200.7	02/17/98 GK
Cadmium	< 0.598	MCA 200.7	02/17/98 GK
Chromium - Total	< 0.896	MCA 200.7	02/17/98 GK
Lead	< 1.99	MCA 200.7	02/17/98 GK
Mercury	< 0.005	SW 7471	02/26/98 RG
Selenium	< 5.00	MCA 200.7	02/17/98 GK
Silver	< 1.00	SW 7760-A	02/13/98 IL

Gabriel Log No.: C802082-04A  
Sample ID: TANKER  
Date Collected: 02/06/98

Sample Matrix: LIQUID  
Date Received: 02/09/98  
Collected By: CLIENT PERSONNEL

<u>Test Description</u>	<u>Result</u>	<u>Method</u>	<u>Analyzed By</u>
pH - Electrode Method	12.5 pH Units	SM 4500-H+	02/10/98 MS
Flash Point - Closed Cup	152 °F	ASTM 3828-87	02/17/98 GS

All units are expressed in mg/L for liquids and mg/Kg for solids except as noted.

Data Release Authorized By: Danuta Panek Date: 2/26/98  
Danuta Panek, Inorganic Group Manager

